CRS Build 6.4 Release Notes

These notes document the new features and bug fixes incorporated into CRS Build 6.4. Where applicable, Engineering Change Request (ECR) numbers have been provided to reference a formally documented problem which has either been partially (open) or completely (closed) resolved by this build. Those descriptions unaccompanied by ECR references (ECR N/A) indicate cosmetic-level changes or corrective actions taken to resolve an undocumented problem discovered while solving an existing problem.

1. **Recording Anomaly Crashes CRS** - CRS Concatenated Voice (CV) changes revamped the CRS digitizing Computer Software Component (CSC), CP_DI, to enable it to use its child process, CP_DI_ADC, to coordinate the distribution of CV WAV-like data files to the Front End Processors (FEPs) for playback. These changes preserve CP_DI_ADC's primary role of reading digital data from the A/D converter card and broadcasting this data to listening streamcopy servers on the FEPs; however, while voice recordings are not being made, WAV file transfers on behalf of the CV mechanism are allowed to take place. This design has the following benefits:

    A. Minimizes the impact of having to transfer significant amounts of data on the network by assuring digital data transfers (voice or concatenated voice) are serial.
    B. Standard voice receives overriding consideration (meaning CV transfers can be interrupted by higher priority voice transfers).
    C. High volume digital data associated with CV files are transferred to the FEPs for playback as fast as possible without degrading the overall responsiveness of the system to users.

    In obtaining these advantages, a critical communications channel between CP_DI and its child CP_DI_ADC was established for CV. This channel enables CP_DI to pass mode control information to CP_DI_ADC that enables it to configure itself properly for voice or concatenated voice data transfers, and then carry out the commanded transfer. In implementing these changes, CP_DI's SIGTERM signal issued to CP_DI_ADC commanding it to die is sometimes ignored. Thus, the next time a recording process is kicked off, the existing CP_DI_ADC and CP_DI disagree as to the state of things and a system restart is forced since this disagreement could indicate something very wrong in the system.

    The solution was to eliminate various timing races in signal exchanges between CP_DI and CP_DI_ADC. Also, a logic "safety net" was created to issue a "kill -9" in the event CP_DI_ADC does not die the way CP_DI instructs it to.

    Closed ECR 660.

2. **CP_VC Process Cores** - The CP_VC process was experiencing cores whenever concatenations were returned from the Voice Concatenation Computer (VCC) with words it did not recognize. This core was caused by local stack frame corruption in a CP_VC function which receives and processes the error tag file from the VCC. ECR N/A.

3. **Identical Message Replace Anomaly With Future Effective Messages** - It was recently discovered that a problem exists with CRS's handling of future effective messages with regard to Identical Message Replacement (IMR). If a future effective message comes into the system, CRS correctly tags the message so that it is not considered for broadcast until its effective time is reached; additionally, no component file for the message is copied yet. If an IMR for this message is received prior to the original message's effective time, and this message's effective time is reached, CRS activates the original message (instead of the IMR) and copies its component file to the Front End Processors (FEPs) for playback.

   CRS has been modified to properly activate the most recent version of a message instead of the original. The associated component file is correctly shadowed to the slave MP so that a subsequent MP switch does not compromise the backup MP's ability to correctly direct the playback of this message.

   Closed ECR 654.

4. **Voice Concatenation** - Build 6.2 (internal to CommPower only) contained the full implementation of the Voice Concatenation (VC) capability for CRS, which was demonstrated at CommPower during the last week of March 2000. Coupled with a VC Computer (VCC) and Ontira Communications' Concatenator software, CRS is now empowered with new automated voice technology.

   Voice Concatenation technology works by substituting phrases of text from an AFOS/AWIPS message with equivalent recordings. These phrase recordings have been previously generated using a studio package from Ontira in support of NWS field operations. Headquarters has completed a base vocabulary in support of prototype system operations to be conducted at Fort Worth, Texas and Glasgow, Montana.

   CRS has been modified to recognize and process a new AFOS/AWIPS message classification of "C", which indicates the contents of the message should be concatenated. The "C" tag causes CRS to attempt concatenation. If the VCC is connected and up, concatenator software is running on the VCC, the CP_VC process is running on the master MP and the VC capability is enabled under **Site Configuration**, then a green up arrow will be displayed next to a **VCC** legend in the **System Status** window indicating CRS is ready to process concatenated messages. In this basic concatenation mode, messages which fail concatenation for whatever reason or if the VCC capability is unavailable, "C" tagged messages will be routed to the Synthetic Speech Override (SSO) service for disposition. Two VC-disabled modes are available in which no "C" tagged messages are concatenated but instead are routed directly to SSO or directly synthesized by DECtalk.

   Messages for concatenation are first submitted to the VCC for concatenation. A few seconds later (depending on input text file size), a WAV-format file suitable for DECtalk digitized playback is returned if concatenation was successful. The representative message is created within the necessary database tables. The attendant digitized file is then distributed to all FEPs (regardless of transmitter mapping) via the streamcopy mechanism. When complete, the message is made active, if applicable. The scheduler is notified and the concatenated message is inserted into one or more transmitter schedules, as necessary.

   Should a message fail concatenation, the original text will be returned to CRS marked up with control sequences surrounding words or phrases which could not be concatenated. These messages appear in the SSO facility. When called up, the elements of the message which failed concatenation are highlighted in reverse video. An operator may choose to: (1) correct the message by using word phrase alternates for highlighted portions and resubmit for concatenation, (2) record the message manually (with live option), (3) submit the message for direct speech synthesis via DECtalk or (4) abandon the message entirely.

During the entire concatenation process, CRS provides visual feedback to operators regarding work-in-progress and failed concatenations which require attention.

Closed ECR 625 (6.2 with 6.3 updates to improve concatenated file distribution).

5. **Long Message Monitor File** - The **Message Monitor** was receiving notifications regarding ftp connects and disconnects. This was primarily a debug output but has remained in place since the AWIPS ftp notification logic was changed in the Version 5 builds. Though the individual notifications are annoying, when initially logging in to the **admin** account, the **Message Monitor** scrolls by all notifications which have been sent since the last reboot which can be a source of distraction. So, CRS has been modified to simply not notify operators when ftp connects/disconnects occur to the Main Processors. Closed ECR 641 (6.2).

6. **CRS Logs Utility** - In support of continuing development on CRS, a GUI CSC log file viewer has been created. This viewer can display any of the /crs/logs/*.log files which contain critical, programmer-related CRS system information essential to the debugging process. With this utility, operators can select which file to view, adjust the logging level, pause/resume log output and clean selected or all logs. An especially welcome feature is that clicking on a log name does not merely produce a snapshot of the file contents but rather updates to show the latest log information dumped into the file by the respective CSC ***in real time***. The log file viewer can be invoked from the admin popup menu or via command line (**/crs/bin/ci_log_view**). Closed ECR 657 (6.2).

7. **Login Banner** - Per ECR 640, a request was made to CommPower to add a security login banner to any and all ports of entry into CRS computers which prompted for user names/passwords. This action was required in order to comply with a NOAA mandate that all such NOAA-owned systems warn users that they should conduct only official business on said computing resource and that by logging in they consent to monitoring as such. The login banner appears in the following instances:

    1. At the graphical login screen on both Main Processors. The banner obscures the login dialog. An operator is required to acknowledge the content of the banner prior to logging in. The banner will reappear 30 seconds following acknowledgment if no user has been authenticated (logged in).
    2. At the console login screen of all processors. The banner is presented immediately prior to the “Login:” prompt (every time the prompt is output).
    3. At interactive telnet sessions. As for console logins, the banner is presented immediately prior to the “Login:” prompt.
    4. At the start of terminal sessions for modem connects. As for console and telnet sessions, the banner is presented immediately prior to the “Login:” prompt.

    Closed ECR 640 (6.3).

8. **No Creation Date/Time in Help/About** - In order to differentiate builds which have the same version number, CRS now installs a date/timestamp denoting when the currently-loaded build was created. To determine this value, select **Help->About** from the CRS Main Menu (item is **APPLICATION CREATED**). Closed ECR 644 (6.3).

9. **Wrong Message Name For 7 and 8 Char. Msg. Types** - Messages which have less than the standard message type name size of nine characters had automatically-generated message names with truncated numeric message type ID and message ID following the four or five character abbreviated message type name. Build 6.3 now correctly constructs the full, automatic message name for seven and eight character message type name messages as it has done for standard nine character message type name messages. Closed ECR 647 (6.3).

10. **Increase Stream Copy Buffer Size** - During the Voice Concatenation demo, it was discovered that the distribution of the concatenated (WAV) file to the FEPs was taking too long. To improve the speed of the transfer, the following steps were taken:
    1. Increased streamcopy packet size from 512 bytes to 1024 bytes.
    2. Increased number of VC streamcopy packets sent per unit of time.
    3. Made streamcopy client a fixed vice time share process (see ECR 656).

    Closed ECR 655 (6.3).

11. **Increase Priority for CP_DI_ADC** - On a related ECR to 655, ECR 656 has been implemented in Build 6.3 to provide priority CPU time to the recording process, CP_DI_ADC. This action is necessary to prevent data dropouts in the digitized file caused by the inability of the application to respond to the OS's notifications to transfer ready digital data from DMA buffers to disk (and network). An added benefit of this is yet another increase in VC file transfer speed since VC transfers utilize the streamcopy mechanism through CP_DI_ADC (subservient to digital recordings, of course). Closed ECR 656 (6.3).

12. **EO Retrieve Failure** - The **Retrieve Emergency Override** function in builds prior to 6.3 does not work properly. The message appears in the Broadcast Cycle but never broadcasts. The cause for this is that the component file never gets copied to the FEPs for playback. This problem has been rectified for Build 6.3. Closed ECR 659 (6.3).

13. **Can't Add One Word To Empty Dictionary** - During the VC demo it was discovered that a single word could not be added to a new dictionary. The manner in which this was performed caused the **Word Pronunciation** program to substitute a NULL dictionaryID (invalid) for the word being added. The result was a failed compile of the pronunciation dictionary. The **Word Pronunciation** program has been fixed to create valid, non-zero dictionaryIDs for any such data entry method within the screen. Closed ECR 661 (6.3).

14. **Schedule Corruption For Transmitters With Too Many LACs Assigned** - A problem in San Juan (SJU), Puerto Rico was fixed in Build 6.3 which manifested itself by playing a certain subset of messages identified in a schedule (via the **Broadcast Cycle** window), usually from the top to a certain message, sometimes just the first message. The problem had to do with too many LACs assigned to a transmitter, which became attached as area scheduling information when related messages were eligible for broadcast. The limit was an artificial one caused by a bug in the FEP scheduler code, PS_MS. Build 6.3 now correctly handles large numbers of areas assigned to transmitters. Closed ECR 664 (6.3).

15. **System Configuration Upgrade Affects Rec/Playback** - If the size of the /crs/data/SS/CRS_sys_cfg file changed due to a build upgrade, then CRS recording/playback functions could cease to work properly on a temporary basis. This can occur because the **ci_menu** application, which presents the CRS Main Menu and associated desktop, is using an old version of the system configuration file on login. When an ASC file is subsequently compiled, a new system configuration file is written which is compatible with the currently running **ci_menu**. However, **ci_menu** only reads the configuration file on initial login. As a result, it is interpreting the old system configuration file incorrectly, which happens to cause it to think the master console is actually a shadow console. As a result, all ACP commands, for example, are sent to the shadow ACP, not the master. To force **ci_menu** to re-read the new system configuration file that it is compatible with, the **crs_site** program now signals **ci_menu** to post a logout dialog when the system configuration file has changed size due to a site configuration. ECR N/A (6.3).

16. **Optional Operator Warning Prompt** - In response to inadvertent generation of NWRSAME and/or alert tones at various sites, the CRS **Weather Messages** window code has been modified to provide a tone validation dialog prompt. This dialog will appear at weather message save time if NWRSAME or alert tones are set for broadcast on at least one transmitter and the CRS system is configured to validate tones. The system can be configured to validate tones through the site ASC file by default (via **Block 5**, **Control Interface Configuration** subsection, **Tone Validation** boolean field) or on an as-needed basis through the **Site Configuration** screen (via **Interface** tab, **SAME/Alert Tone Warning Validation** checkbox).

    Also, the **Site Configuration** window has been laid out using a notebook tab sheet widget. This widget is a more modern user interface element which enables efficient multiplexing of the small screen real estate available in this window. Closed ECR 648 (6.3).